

# Testing and Validation

## WoT Test Bench

A Special Servient for Testing a Thing Implementation based on its  
Thing Description

# Motivation

## 1) As a Thing consumer (Human or Consumer Thing):

### 1) How to know whether a Thing respects its TD, for example:

- 1) Are all said interactions available?
- 2) Are all writable properties writable?
- 3) Do all actions with an output return an output?
- 4) Is data delivered like in the TD data schema

And more...

## 2) As a Thing developer:

- 1) How to test my implementation during the development time
- 2) I can set a TD as my requirement and develop the implementation until I reach what is specified in the TD

# Proposal

Building a tool that can execute all the interactions of a Thing with as many possible combinations:

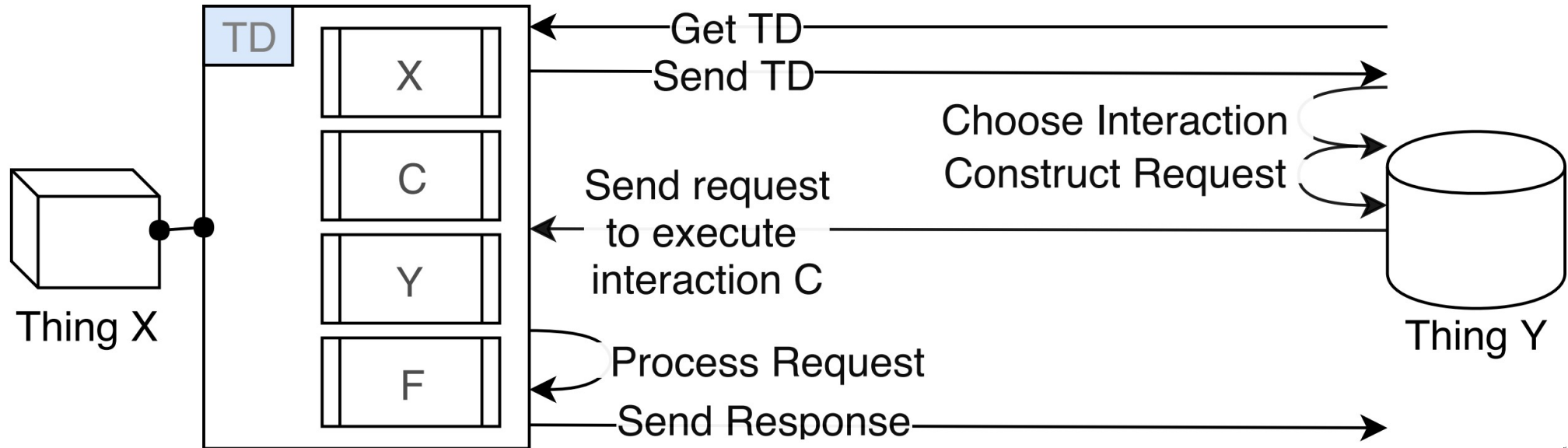
- Read properties
- Write into properties
- Invoke actions
- (Subscribe to events and wait)

# Proposal

Would be better to implement it as a WoT servient:

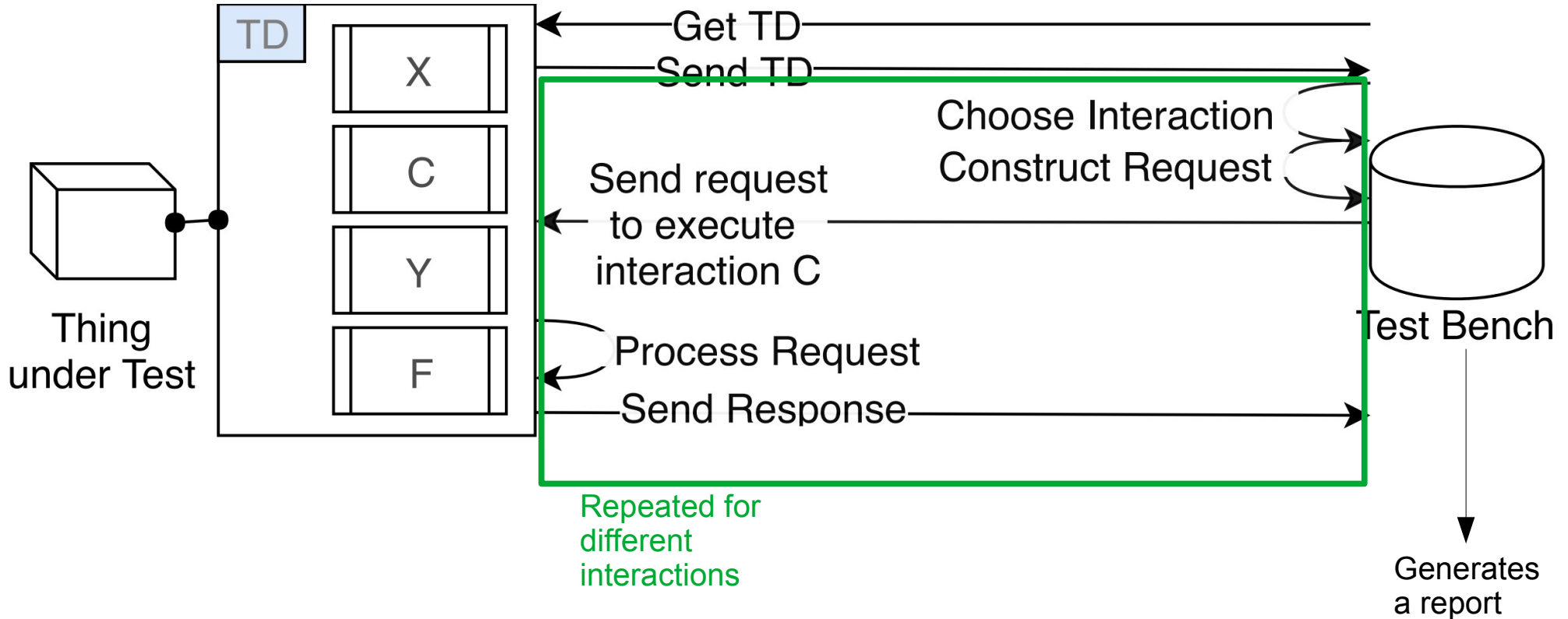
- No need to learn how to use it
- Can run anywhere by anyone
- Rely on scripting API in order to reduce development time

# Proposal



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# Proposal

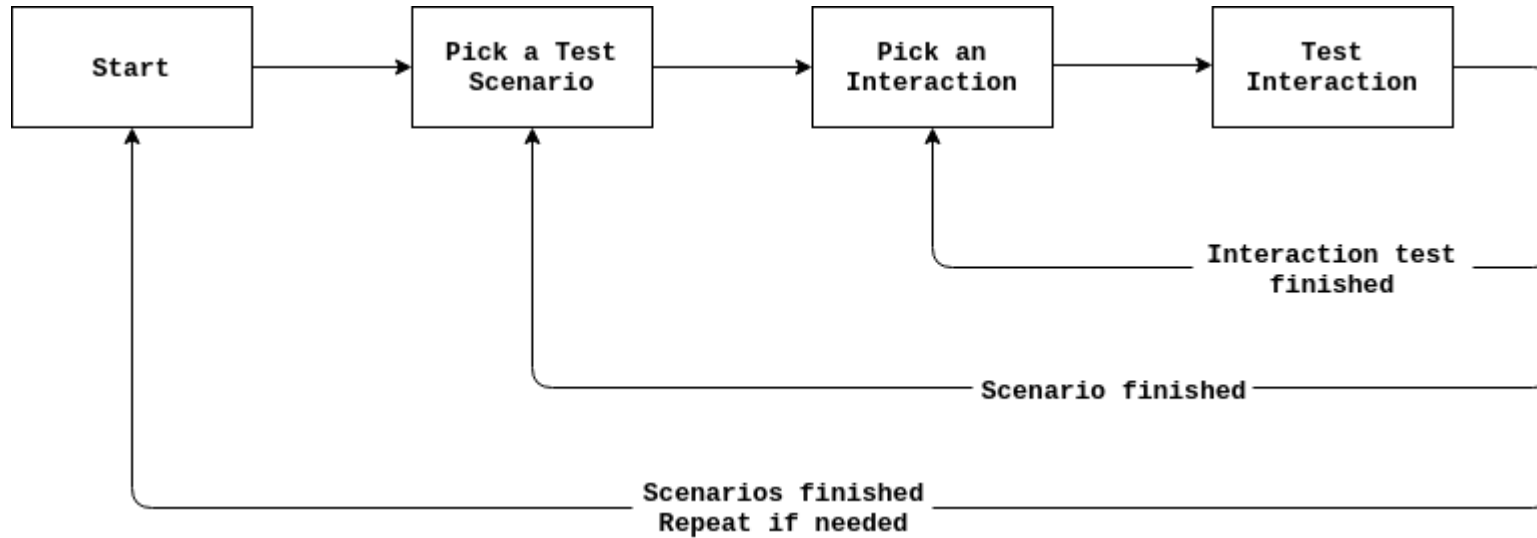


# User Point of View

- 1) Send a TD
- 2) Receive a Report

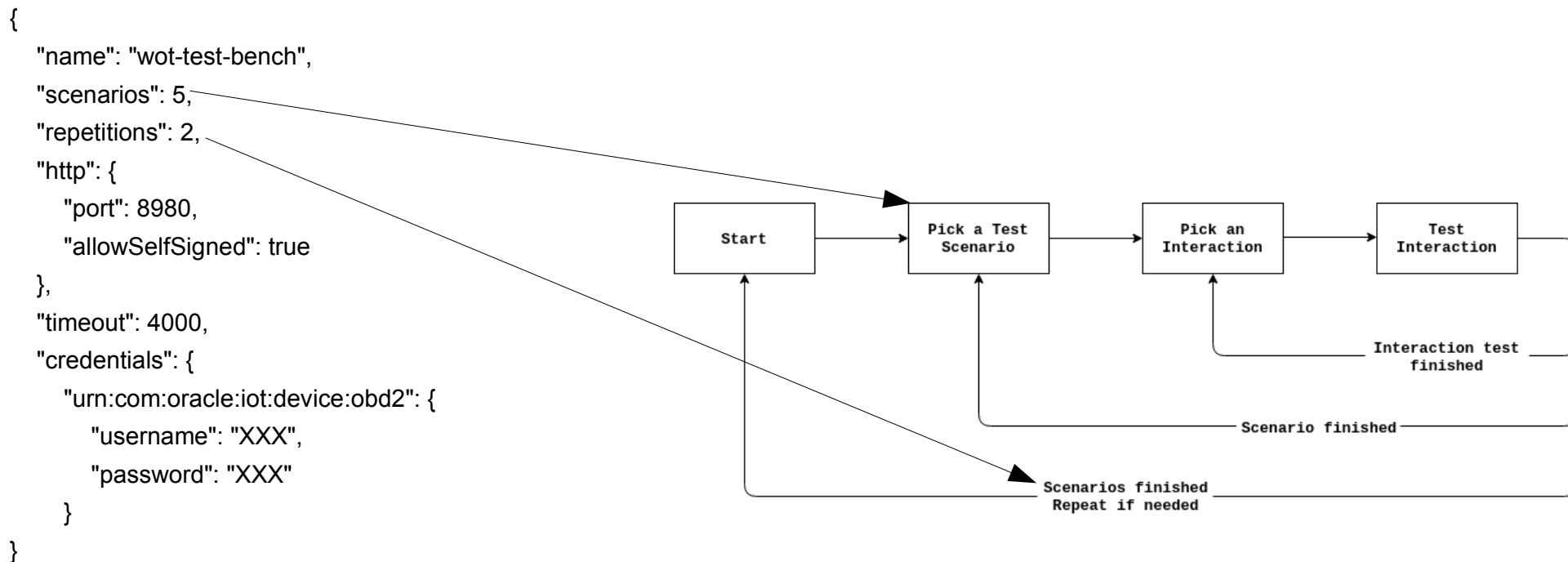
This should be the simplest case with any configuration being optional

# Testing Flow



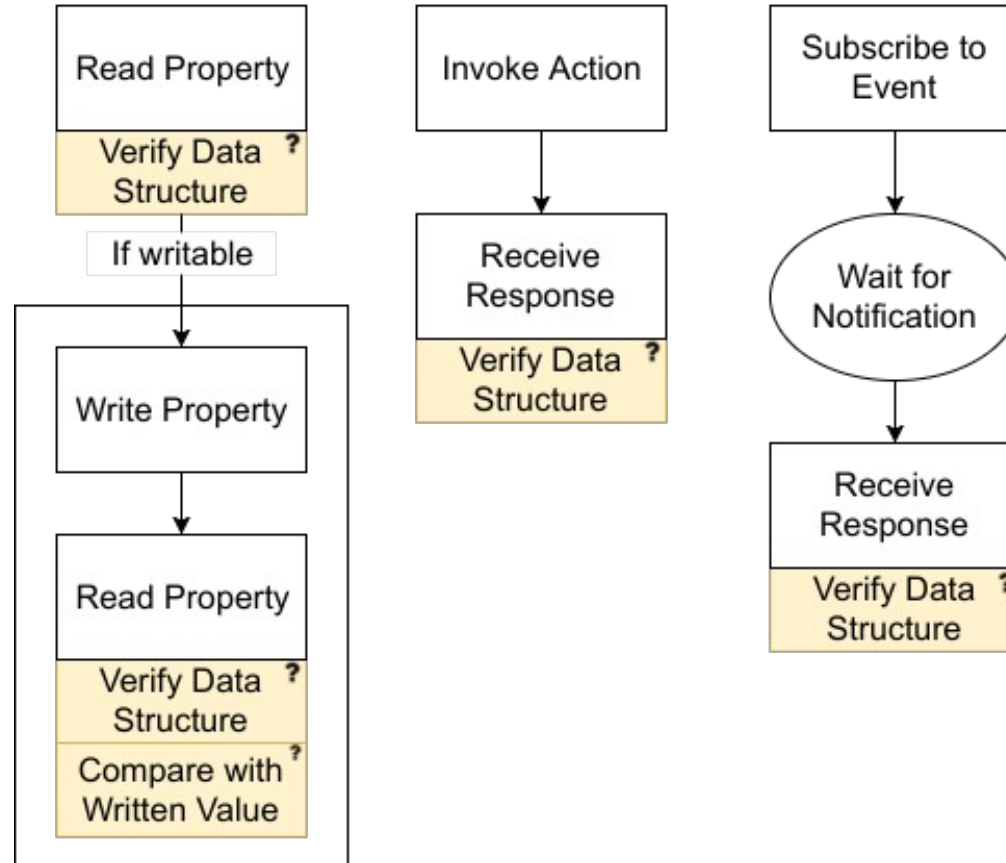


# Testing Flow Configuration



There is a default configuration so configuration is entirely optional

# Interaction Testing



# Plugfest

- Was used to test many Things:

- Blue Pump
- EventSource
- Festo
- Fujitsu-RotaryBeaconLight
- Fujitsu-WiFiAgent240AC40783A0
- Illuminance Sensor
- Intel-WebSpeak-upsq0
- ora\_obd2\_device\_model
- PanasonicAirConditionerP1
- Sense HAT
- SiemensIoTDemo
- TestServient
- TestThing
- ...

# Demo

# Plugfest Summary

- The detected errors were split into two main groups:
  - (Small) Data Schema errors:
    - Number vs Integer
    - Const
  - (Big) Connection related issues:
    - Not being able to connect to a Thing in any way
    - Part of the interactions being not executable
- Multiple forms with multiple security requirements are not well handled at the moment
- Only JSON data format is supported

# Future Work

- Event testing
- Other mediaTypes
- Separate the testing into connection testing and Thing testing